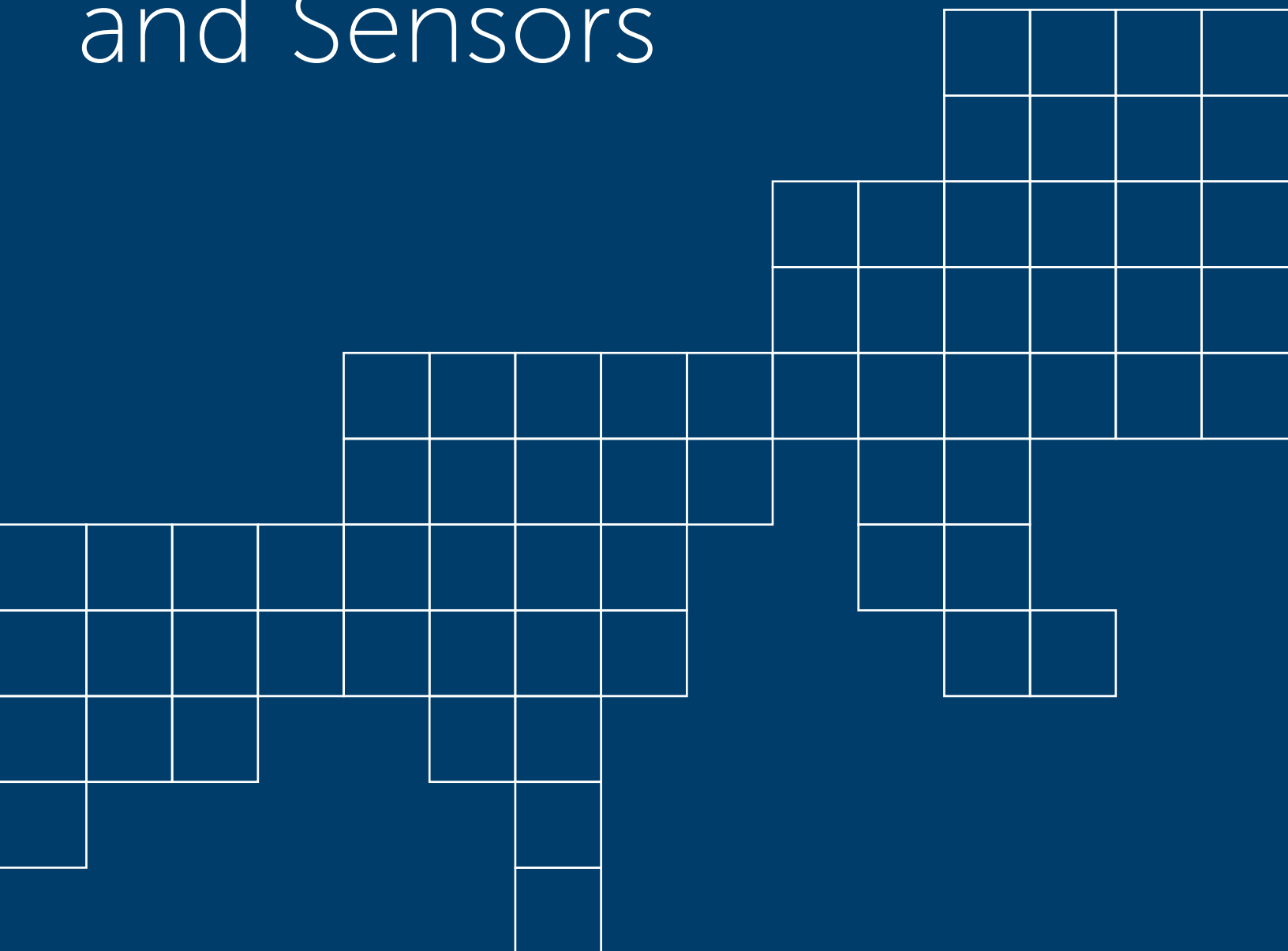


Actuators, Pedals and Sensors



Your Partner in Smart Solutions

CTS Corporation is a global manufacturer of sensors, actuators and electronic components. Having served the automotive industry for over thirty years, CTS supports some of the largest transportation OEMs from locations in North America, Asia and Europe.

As technology continues to evolve, CTS remains focused on the future with investment and innovation around products that Sense, Connect and Move. Our Pedals have spanned the contacting and non-contacting eras while our sensor portfolio has expanded to support ever more intelligent systems. In addition, we have developed complex actuator technologies that can withstand the harshest of environments.

At CTS, we offer more than advanced products to meet your technical needs. We value partnerships, and are able to accomplish high levels of collaboration with our customers while remaining flexible to meet their needs.

Transportation Market Sectors:



Commercial



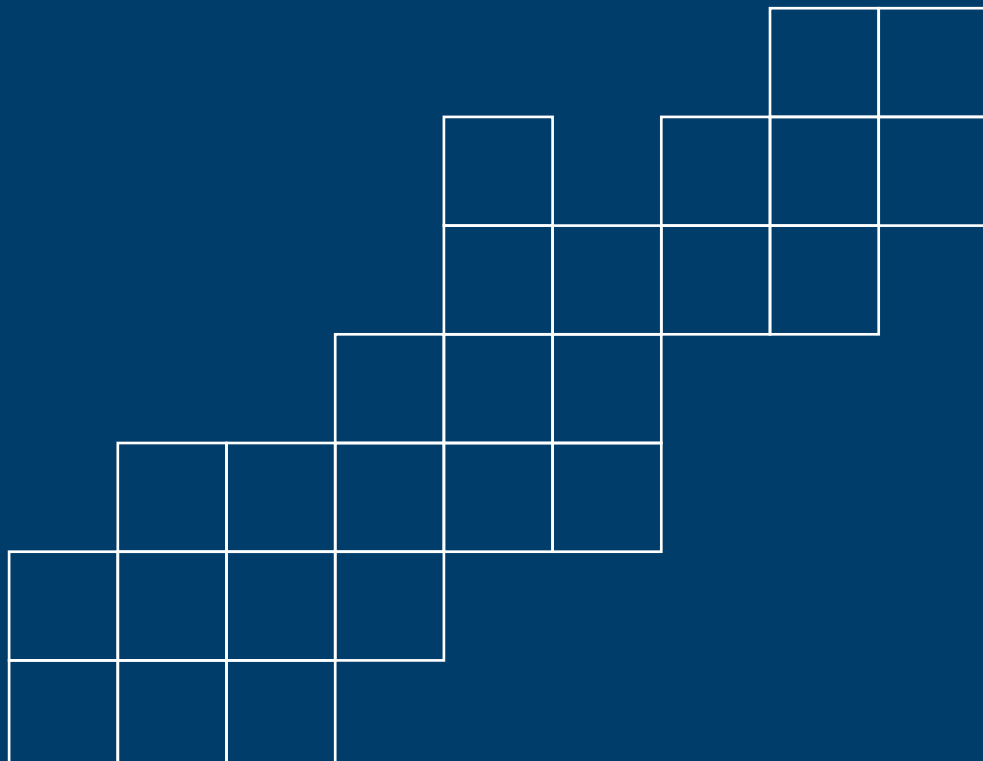
Light-Vehicle



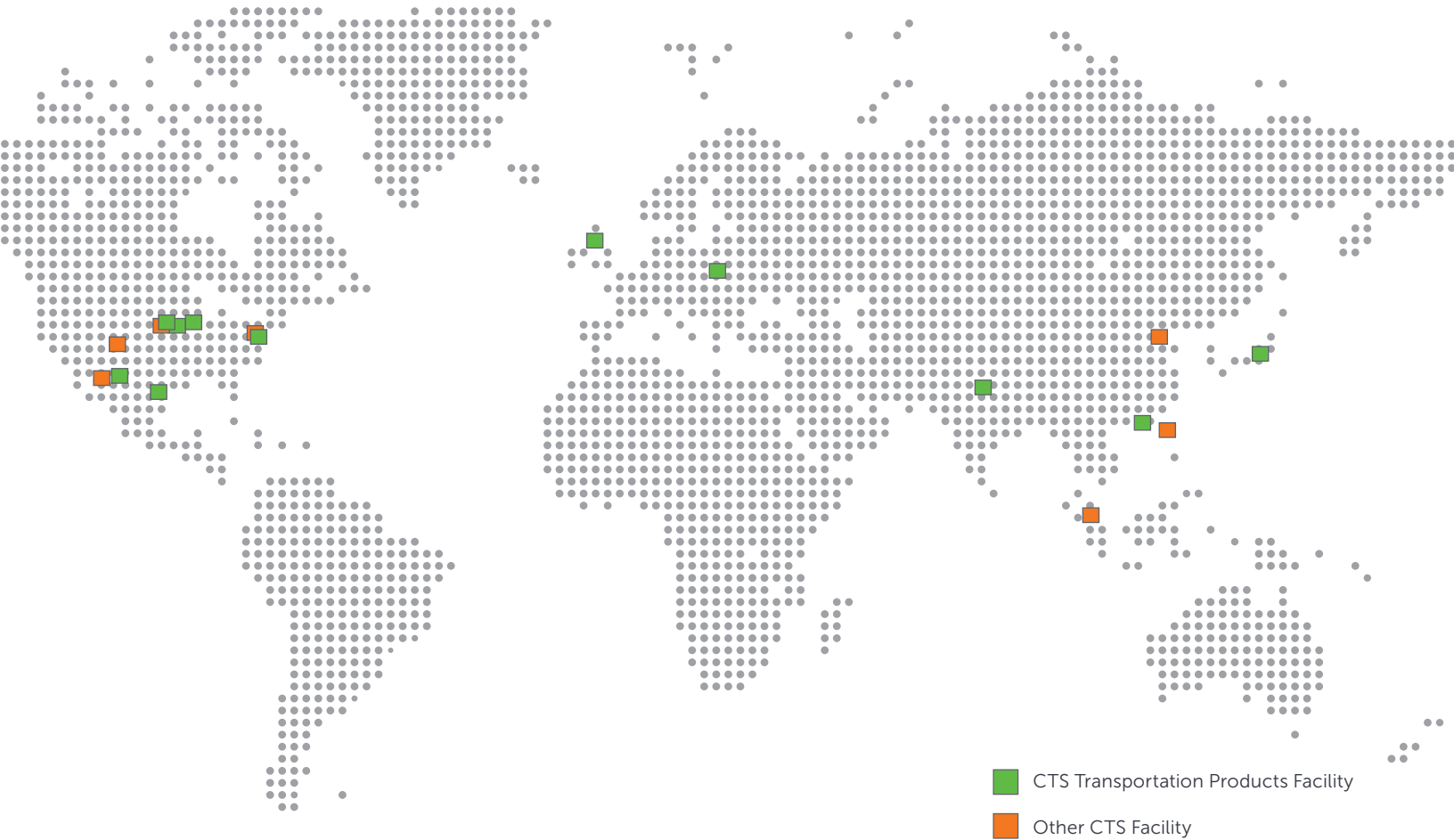
Non-Road Mobile
Machinery



Two-Wheel



Global Footprint



Engineering Competencies

Our vertical structure enables strong collaboration between engineering and manufacturing teams; driving tangible benefits for our partners throughout the world.

- » Global design team leveraging the latest computer-aided engineering tools
- » In-house plastic injection mold design and manufacturing
- » Extensive in-house product validation testing and non-destructive testing
- » Assembly layout and individual station functions are developed in-house, leveraging the product engineering groups to ensure that the highest product quality and performance is achieved
- » At many of CTS' global manufacturing locations, these functions are co-located. This increases efficiency, cost management and responsiveness

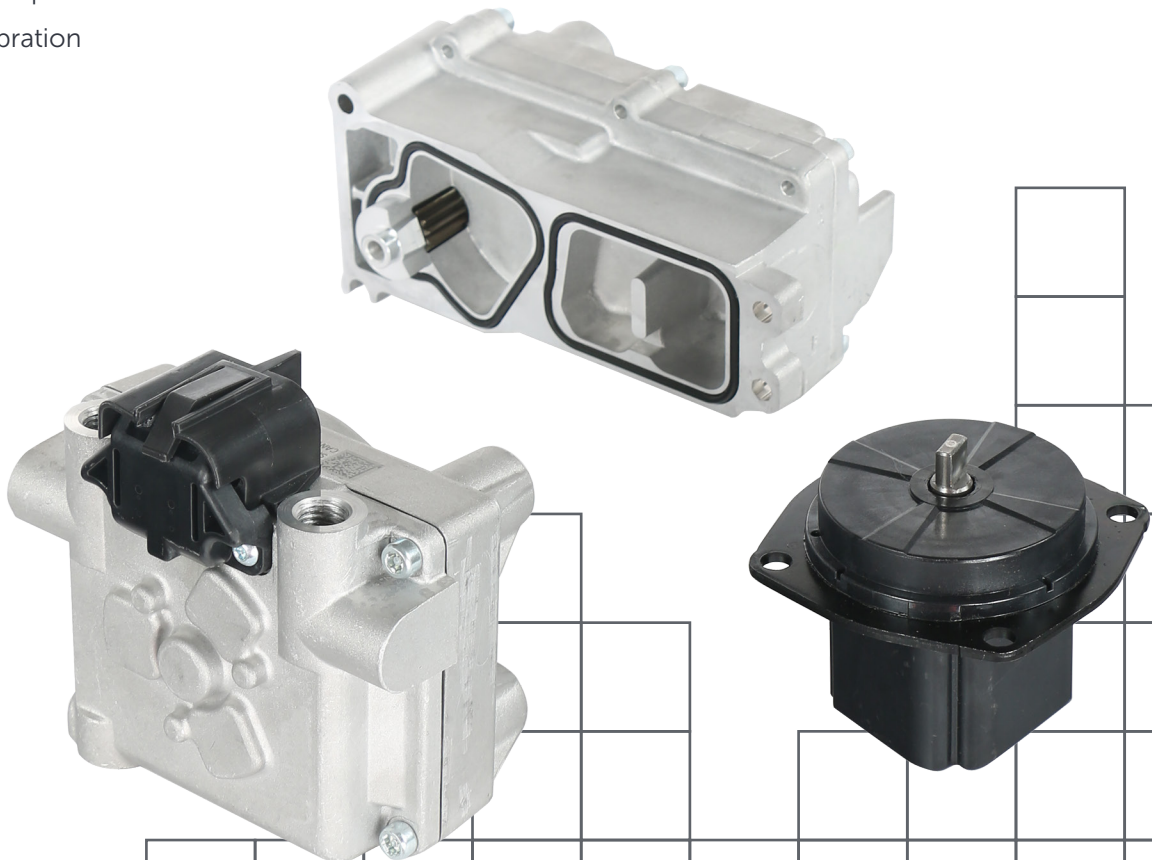
Actuators

With over 1 million units on the road today, CTS' actuators for the transportation industry offer precision mechatronic solutions that are ideally suited for extreme temperature, high torque applications in harsh environments. We package the right combination of reliability, response, temperature and torque; these factors are critical for throttle, turbocharger and EGR applications designed to improve fuel economy and reduce emissions.

CTS actuators can be fitted with position sensing capabilities for closed-loop control, enabling them to communicate with the engine control unit (ECU). Global emissions targets continue to require more complicated solutions and a variety of engineering disciplines. With expertise in mechanical, electrical and software engineering, CTS provides answers.

Features and Benefits:

- » High Torque Density
- » Extreme Temperature Operation
- » Quick Response
- » Diagnostic Capability
- » Absolute Position Sensing
- » Integral Connectors
- » Closed Loop Control
- » Self-Calibration



Pedals

CTS is a leading designer and manufacturer of accelerator pedal modules offering custom, state of the art solutions for the light and commercial vehicle industries.

With millions of pedals on the road today, CTS' portfolio consists of non-contacting, Hall-effect and thick film contacting technologies designed to exceed industry requirements for accuracy and durability. Optional features such as kick-down, sport pads, unibody construction, and plastic or metal pedals arms allow for the customization manufacturers demand.

Features and Benefits:

- » Integrated Dual Output Sensor
- » Dual Load/Return Force Generation
- » Compact Size
- » Customized Mounting and Connecting Configurations
- » Six Pin Connector (Typical)
- » Design Flexibility
- » Optional Metal Mounting Inserts
- » Optional Kickdown
- » Optional Metal or Plastic Pedal Arm



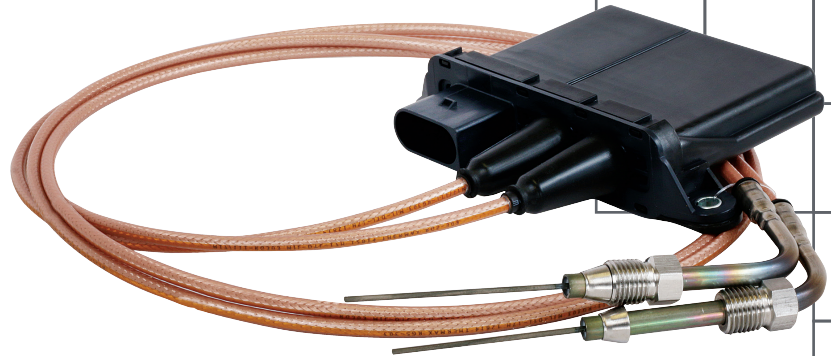
Sensors

CTS is a leading designer and manufacturer of sensors offering custom, state of the art solutions for the light and commercial vehicle industries. CTS' sensors focus on Passenger/Occupant Safety, Pedal, Chassis, Powertrain and Fluid Management applications.

CTS has Expertise in the Following Sensors:

- » Brake Sensors
- » Chassis Ride Height Sensors
- » Fuel Level Sensors
- » Powertrain Sensors (Turbo, Throttle and EGR)
- » Seat Belt Tension Sensors
- » Seat Belt Buckle Switches
- » Seat Track Position Sensors
- » Transmission Sensors
- » Wheel Speed and Transmission Speed Sensors





RF Sensors

CTS' RF Sensors are designed for on-vehicle sensing, control, and diagnostics of diesel particulate filters (DPF) and gasoline particulate filters (GPF). The sensor is capable of directly measuring soot and ash levels in the particulate filter and controlling/diagnosing aftertreatment system operation based on the filter measurements.

Real-time measurements and feedback control based on filter soot and ash levels enable the following benefits for OEM and retrofit applications:

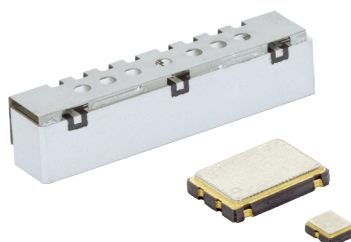
- » Reduced engine fuel consumption through optimized regeneration intervals and duration
- » Advanced filter diagnostics with powerful in-use monitoring capabilities on the vehicle
- » Decreased warranty claims via more precise feedback control of particulate filter operation
- » Lower maintenance costs by measuring ash directly, cleaning the particulate filter only when needed
- » Extend component life by minimizing high temperature regenerations
- » Reduce system costs by utilizing smaller or less expensive filters via improved sensing
- » Faster development times by decreasing the resources needed for particulate filter calibration

Electronic Components

CTS manufactures electronic components to serve a variety of functions. From enabling drivers to control functions of their vehicle, to connecting vehicles to broadband multimedia and take part in autonomous drive sensing; CTS is your source for all things that Sense, Connect and Move.



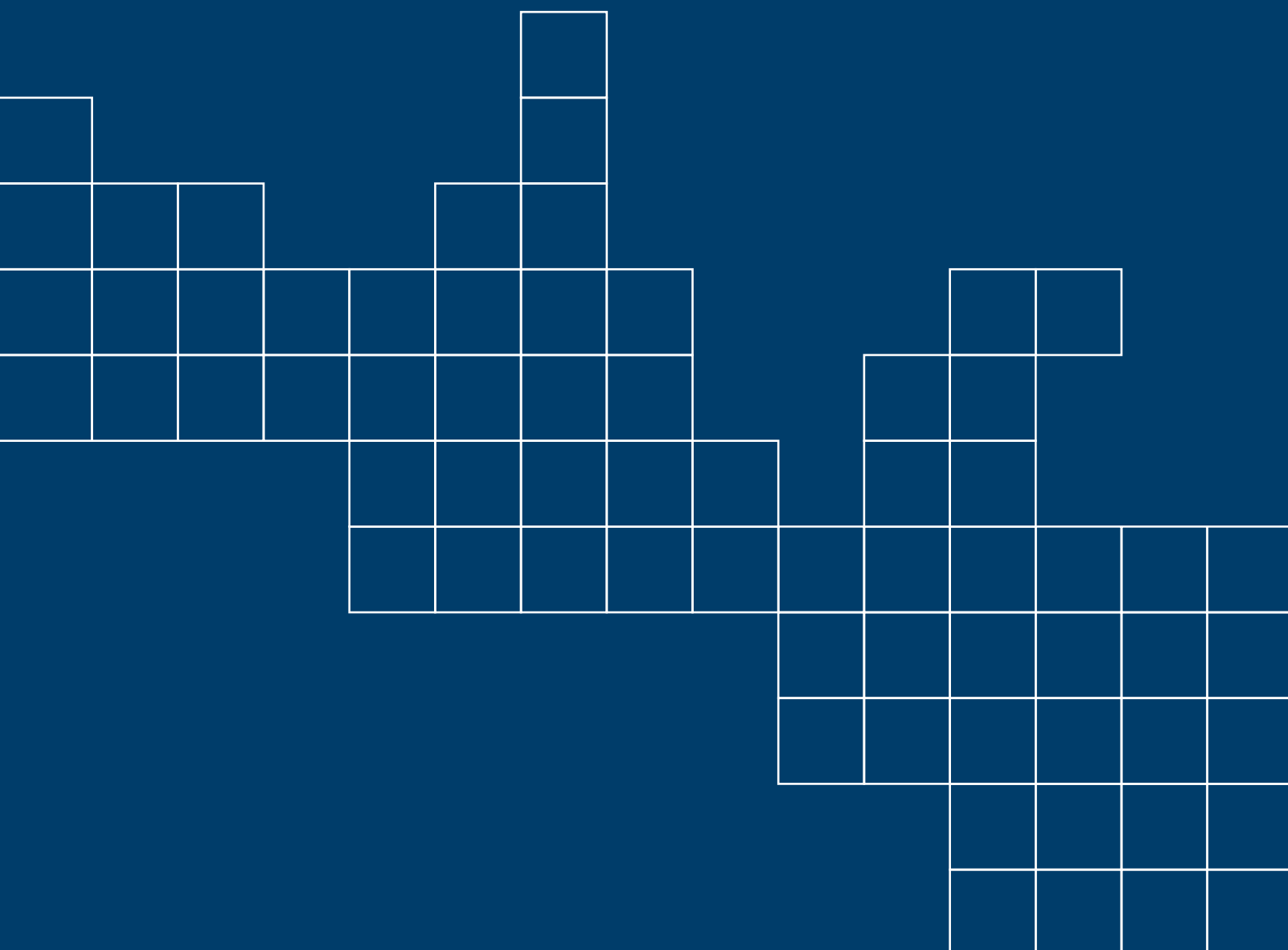
Human Machine Interface
Controls and Switches



Frequency Control, RF Filters,
Waveguide Filters



Custom Piezoelectric
and Ceramic Products



Contact Sales

North America
T: +1 (248) 737-0187

China
T: +86-133-1203-7117

Japan
T: +81-45-450-2363

Europe
T: +49-6152-710172

transportationproducts@ctscorp.com

www.ctscorp.com

